AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended): A semiconductor optical device comprising:

a substrate having a surface of a first semiconductor having a first lattice constant; and

a semiconductor lamination layer formed on said substrate, said semiconductor lamination layer having an active layer which contains quantum dots of a first kind made of a second semiconductor having a second lattice constant smaller than the first lattice constant, and quantum dots [[o fa]] of a second kind made of a third semiconductor having a third lattice constant larger than the first lattice constant.

Claim 2 (previously presented): A semiconductor optical device according to claim 1, wherein the active layer further includes barrier layers substantially lattice matching the first lattice constant, and the quantum dots of the first kind and the second kind are buried in the barrier layers.

Claims 3-4 (canceled).

Claim 5 (previously presented): A semiconductor optical device according to claim 1, wherein the quantum dots of the first and second kinds are alternately distributed along a thickness direction in plane shape among the barrier layers.

Claim 6 (previously presented): A semiconductor optical device according to claim 2, wherein the quantum dots of the first and second kinds are alternately distributed along a thickness direction in plane shape among the barrier layers.

Claim 7 (original): A semiconductor optical device according to claim 1, wherein the first semiconductor is InP and the second semiconductor is $In_xGa_{1-x}N_yAs_{1-y}$ ($0 \leq x \leq 0.5$, $0 \leq y \leq 0.5$).

Claim 8 (original): A semiconductor optical device according to claim 1, wherein the first semiconductor is GaAs and the second semiconductor is GaAsP.

Claim 9 (original): A semiconductor optical device according to claim 1, wherein the active layer has a pair of end planes constituting a cavity, and the device further comprising antireflection films formed on the pair of end planes.

Claim 10 (previously presented): A semiconductor optical device according to claim 2, wherein the active layer has a pair of end planes constituting a cavity, and the device further comprising antireflection films formed on the pair of end planes.

Claim 11 (original): A semiconductor optical device according to claim 10, further comprising a pair of optical fibers optically coupled to the pair of end planes.

Claim 12 (previously presented): A semiconductor optical device having quantum dots with tensile strain and quantum dots with compressive strain.

Claim 13 (original): An optical communication system comprising:

an input optical fiber for supplying an optical signal; and

a semiconductor optical amplifier comprising a substrate having a surface of a first semiconductor having a first lattice constant, and a semiconductor lamination layer formed on said substrate, said semiconductor lamination layer having an active layer which contains quantum dots of a first kind made of a second semiconductor having a second lattice constant in bulk state smaller than the first lattice constant and quantum dots of a second kind made of a third semiconductor having a third lattice constant in bulk state larger than the first lattice constant.

Claim 14 (original): An optical communication system according to claim 13, wherein the active layer further includes barrier layers substantially lattice matching the first lattice constant, and the quantum dots of the first and second kind are buried among the barrier layers.

Claim 15 (original): An optical communication system according to claim 14, wherein the quantum dots of the first and second kinds are alternately distributed along a thickness direction in plane shape among the barrier layers.

Claim 16 (original): An optical communication system according to claim 13, wherein the first semiconductor is InP and the second semiconductor is $In_xGa_{1-x}N_yAs_{1-y}$ ($0 \leq x \leq 0.5$, $0 \leq y \leq 0.5$).

Claim 17 (original): An optical communication system according to claim 13, wherein the first semiconductor is GaAs and the second semiconductor is GaAsP.

Claim 18 (original): An optical communication system according to claim 13, wherein the first semiconductor is InP, the second semiconductor is GaAs and the third semiconductor is InAs.

Claim 19 (original): An optical communication system according to claim 13, wherein the active layer has a pair of end planes constituting a cavity, and the amplifier further comprising antireflection films formed on the pair of end planes.

Claim 20 (original): An optical communication system according to claim 19, further comprising an output optical fiber optically coupled to a remaining one of the pair of end planes.

Claim 21 (previously presented): A semiconductor optical device comprising:

a substrate having a surface of a first semiconductor of InP having a fist lattice constant; and

a semiconductor lamination layer formed on said substrate, said semiconductor lamination layer having an active layer which contains quantum dots of a first kind made of a second semiconductor of $In_xGa_{1-x}N_yAs_{1-y}$ ($0 \leq x \leq 0.5$, $0 \leq y \leq 0.5$) having a second lattice constant smaller than the first lattice constant.

Claim 22 (previously presented): A semiconductor optical device according to claim 21, wherein the active layer further includes barrier layers substantially lattice matching the first lattice constant, and the quantum dots of the first kind are buried in the barrier layers.

Claim 23 (previously presented): A semiconductor optical device according to claim 21, wherein the active layer of said semiconductor lamination layer contains quantum dots of a second kind made of a third semiconductor having a third lattice constant larger than the first lattice constant.

Claim 24 (previously presented): A semiconductor optical device according to claim 22, wherein the active layer of said semiconductor lamination layer contains quantum dots of a second kind made of a third semiconductor having a third lattice constant in bulk state larger than the first lattice constant.

Claim 25 (previously presented): A semiconductor optical device according to claim 23, wherein the quantum dots of the first and second kinds are alternately distributed along a thickness direction in plane shape among the barrier layers.

Claim 26 (previously presented): A semiconductor optical device according to claim 24, wherein the quantum dots of the first and second kinds are alternately distributed along a thickness direction in plane shape among the barrier layers.

Claim 27 (previously presented): A semiconductor optical device according to claim 21, wherein the active layer has a pair of end planes constituting a cavity, and the device further comprising antireflection films formed on the pair of end planes.

Claim 28 (previously presented): A semiconductor optical device according to claim 24, wherein the active layer has a pair of end planes constituting a cavity, and the device further comprising antireflection films formed on the pair of end planes.

Claim 29 (previously presented): A semiconductor optical device according to claim 28, further comprising a pair of optical fibers optically coupled to the pair of end planes.

Claim 30 (previously presented): A semiconductor optical device according to claim 23, wherein the third semiconductor is InAs.

Claim 31 (previously presented): A semiconductor optical device comprising:

a substrate having a surface of a first semiconductor of GaAs having a first lattice constant; and

a semiconductor lamination layer formed on said substrate, said semiconductor lamination layer having an active layer which contains quantum dots of a first kind made of a

second semiconductor of GaAsP having a second lattice constant smaller than the first lattice constant.

Claim 32 (previously presented): A semiconductor optical device according to claim 31, wherein the active layer further includes barrier layers substantially lattice matching the first lattice constant, and the quantum dots of the first kind are buried in the barrier layers.

Claim 33 (previously presented): A semiconductor optical device according to claim 31, wherein the active layer of said semiconductor lamination layer contains quantum dots of a second kind made of a third semiconductor having a third lattice constant larger than the first lattice constant.

Claim 34 (previously presented): A semiconductor optical device according to claim 32, wherein the active layer of said semiconductor lamination layer contains quantum dots of a second kind made of a third semiconductor having a third lattice constant in bulk state larger than the first lattice constant.

Claim 35 (previously presented): A semiconductor optical device according to claim 33, wherein the quantum dots of the first and second kinds are alternately distributed along a thickness direction in plane shape among the barrier layers.

Claim 36 (previously presented): A semiconductor optical device according to claim 34, wherein the quantum dots of the first and second kinds are alternately distributed along a thickness direction in plane shape among the barrier layers.

Claim 37 (previously presented): A semiconductor optical device according to claim 31, wherein the active layer has a pair of end planes constituting a cavity, and the device further comprising antireflection films formed on the pair of end planes.

Claim 38 (previously presented): A semiconductor optical device according to claim 34, wherein the active layer has a pair of end planes constituting a cavity, and the device further comprising antireflection films formed on the pair of end planes.

Claim 39 (previously presented): A semiconductor optical device according to claim 38, further comprising a pair of optical fibers optically coupled to the pair of end planes.